
Geometry 1B

Course Description

In Geometry 1B students develop geometry skills while studying similarity, area and volume, right triangles, circles, coordinate geometry, and transformations. The concepts of problem solving, communication, reasoning, and connections are addressed in this course.

Learning is enhanced by numerous interactive components. Students observe and listen as step-by-step examples of key algebraic concepts are presented on a virtual blackboard. With Visual Math manipulatives via external websites, students see complex geometry concepts in action as they control variables in proportionality, trigonometric functions, angle measurements and properties, reflections, translations, rotations, dilations, geometric theorems, and areas of geometric figures. The course's interactive geometry software provides students additional hands-on practice with geometric concepts.

Reading and writing skills are incorporated throughout the course as students participate in discussion groups about mathematics and complete geometry application assignments. Throughout the course, Real-World Connection segments help students relate their learning to real-life situations.

Overview

Unit 1 – Proportion and Similarity

- Lesson 1: Ratio and Proportion
- Lesson 2: Similar Polygons and Triangles
- Lesson 3: Parts of Similar Triangles

Unit 2 – Right Triangles

- Lesson 1: Using Right Triangles
- Lesson 2: Trigonometry and Right Triangles
- Lesson 3: Using Trigonometry

Unit 3 – Circles

- Lesson 1: Parts of Circles
- Lesson 2: Chords and Tangents
- Lesson 3: Secants and Segments

Unit 4 – Polygons, Area, and Volume

- Lesson 1: Polygons and Quadrilaterals
- Lesson 2: Areas of Polygons and Circles
- Lesson 3: Surface Area and Volume

Unit 5 – Coordinate Geometry

- Lesson 1: Equations of Lines
- Lesson 2: Coordinate Proofs and Vectors
- Lesson 3: Coordinates in Space

Unit 6 – Loci and Transformation

- Lesson 1: Loci
- Lesson 2: Transformations
- Lesson 3: More Transformations

Objectives

Students completing this course will be able to demonstrate the following skills:

- Write and simplify rates, ratios, and proportions.
- Apply ratios and proportions to solve problems, including scale drawings.
- Identify similar polygons and similar triangles and use them to solve problems.
- Prove theorems and solve problems about proportional parts of similar triangles.
- Use the Pythagorean Theorem to solve problems with triangles.
- Solve problems using relationships between parts of a right triangle and the altitude to its hypotenuse.
- Find values of trigonometric ratios and measures of angles in right triangles.
- Recognize and apply trigonometric relationships to solve practical problems involving triangles.
- Identify concepts and figures related to circles, and find measures of their arcs and angles.
- Use a trigonometric table to find the sine, cosine, or tangent of an angle.
- Use trigonometric functions to solve problems.
- Use properties of chords, secants, and tangents to solve problems.
- Write and graph the equation of a circle.
- Prove theorems and solve problems about circles.
- Interpret data displayed in pictographs, line graphs, bar graphs, and circle graphs.
- Identify polygons and their parts and find the measures of their angles.
- Find the areas of triangles, quadrilaterals, polygons, and circles.
- Find surface areas and volumes of prisms, pyramids, cylinders, cones, and spheres.
- Graph linear equations and write equations of lines when given their properties.
- Identify properties of vectors and perform operations with vectors.
- Prove theorems using coordinate geometry.
- Solve problems using coordinates of points in three-dimensional space.
- Locate, describe, draw, and apply loci of points in a plane and in space.
- Recognize and apply the transformations of reflection, translation, rotation, and dilation.
- Choose and apply appropriate strategies for solving practical problems.

Activities and Assessments

- **Practice Sets and 18 Vocabulary Reviews** – Each lesson has numerous practice sets, along with a review of math vocabulary.
- **6 Online Discussion Group Activities** – At the end of each unit, students participate in a group discussion of a topic relevant to the material covered. The teacher evaluates the students' contributions to the discussion and provides grading and feedback.
- **6 Application Assignments** – At the end of each unit, students demonstrate their understanding of geometric concepts by completing a computer-graded geometry application assignment.
- **18 Lesson Quizzes and 6 Unit Evaluations** – Along with numerous self-check activities throughout the course, there is a quiz at the end of each of the 18 lessons in the course. There is also an evaluation at the end of each of the six units. All of these assessments are computer-graded and provide students with instant feedback on their work.